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## Abdominal compartment syndrome after scuba diving

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Sir: A 30-year-old male amateur diver suffered a panic attack at a depth of 65 m and ascended to the surface within 2 min. He was referred to our emergency room because of hemoptysis and abdominal pain. Physical examination revealed a grossly distended, tympanic abdomen. Computed tomography of the abdomen showed a massive pneumoperitoneum (Fig. 1). Pneumothorax was excluded. Emergency laparotomy was performed because of abdominal compartment syndrome and suspicion of viscus perforation. Air escaped explosively during laparotomy. The extended exploration of the anterior and posterior aspects of the stomach and the intestine and temporarily clamping proximal to the pylorus with air insufflation through a gastric tube showed no perforation of the gastrointestinal tract. Since the patient suffered of signs of decompression sickness (paresthesia, myoclonus), he was treated with hyperbaric oxygen (HBO) in a decompression chamber. Air probably escaped through a temporary leak in the stomach wall caused by the sudden distension. When the stomach returned to its normal size after air had escaped, the leak adapted again as a valve and was no more visible during the intraoperative inspection.

Pneumoperitoneum is generally caused by a rupture in the gastrointestinal tract. About 20 cases of diving-related pneumoperitonea have been reported [1, 2, 3], most of them as consequence of a gastric barotrauma. However, pneumoperitoneum after scuba diving has also been reported after pulmonary barotrauma [3] or even without detectable organ perforation. Some authors recommend contrast studies and endoscopy to reveal a perforation [4]. We disagree because this may cause additional

damage. Peritoneal decompression by paracentesis may quickly improve the patient's condition. The lesion is often on the lesser curvature [1]. If there is no suspicion of intestinal perforation, following the same rationale as for gas embolism or paralytic ileus HBO can be tried before surgery [5]. After each emergency ascent a safety HBO therapy in a decompression chamber is necessary (280 kPa over 90 min). If there are signs of decompression sickness or arterial gas embolism, HBO therapy must be extended. Pneumoperitoneum is a rare diving-related complication which can develop even without detectable organ perforation.

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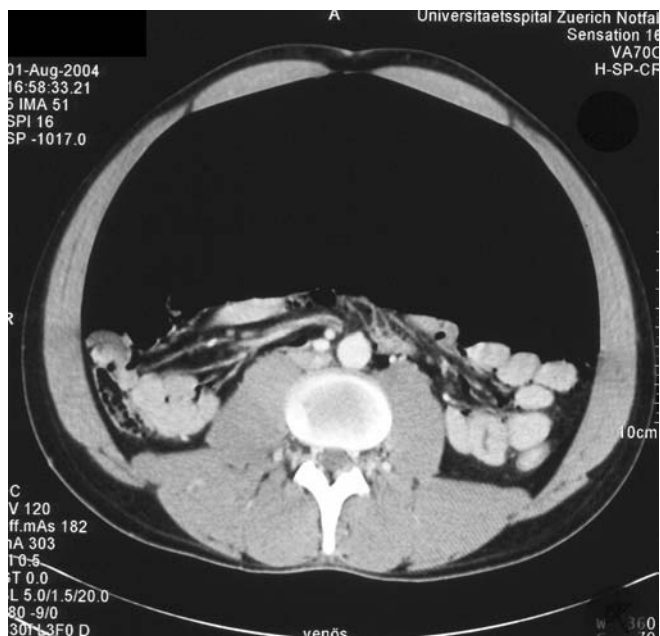
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**Fig. 1** Computed tomography of inferior abdomen with an extended pneumoperitoneum and compression of the gastrointestinal tract